

Claims

1. (Amended): A device to accommodate fluid thermal expansion/contraction in a closed heat transfer loop that excludes air also, which is comprised of: a one-way out pressurizing pressure relief valve and a one-way in vacuum fluid recovery valve plumbed in parallel from the highest single point in the solar system to below the fluid level of an unpressurized overflow/recovery reservoir.
2. (Amended): A solar collector over-temperature protection device which consists of a gas bubble "steam" condensing liquid-to-air radiator between the highest point on the solar collector and the device to accommodate fluid thermal expansion/contraction in a closed heat transfer loop that excludes air also, which consists of: a liquid-to-air radiator in series with a one-way out pressurizing pressure relief valve and a one-way in vacuum fluid recovery valve plumbed in parallel from the highest single point in the system above the radiator to below the fluid level of an unpressurized overflow/recovery reservoir.
3. (Amended): A solar collector over-temperature protection device that consists of a gas bubble "steam" pressure-actuated piston to open air dampers that allow outside air to flow over and cool the solar collector's absorber plate, where the piston pressure input is connected between the solar collector and the device to accommodate fluid thermal expansion/contraction in a fluid filled, closed loop, system, which consists of: a pressure activated piston connected to the closed loop, a one-way out pressurizing pressure relief valve and a one-way in vacuum fluid recovery valve plumbed in parallel from the single highest point in the solar system to below the fluid level of an unpressurized overflow/recovery reservoir.
4. (Canceled): A flexible umbilical assembly that carries and insulates the heat transfer fluid tubing while protecting it from the elements with a clamp-on "clam-shell" split pipe external covering and includes all electrical connections between the solar collector and the hot water tank.

5. (Canceled): The system as in claim 1 comprised of a 220/115 VAC controller and pump and boiling activated over-temperature protection.

6. (Canceled): The system as in claim 1 comprised of a 220/115 VAC controller and pump, with pressure activated over-temperature protection.

7. (Canceled): The system as in claim 1 or claim 2 comprised of a a photovoltaic panel and low voltage (12VDC) pump, with boiling activated over-temperature protection.

8. (Canceled): The system as in claim 1 or claim 3 comprised of a photovoltaic panel and low voltage (12VDC) pump, with pressure activated over-temperature protection.

9. (Canceled): The system as in claim 2 comprised of a 220/115 VAC controller and pump and boiling activated over-temperature protection.

10. (Canceled): The system as in claim 3 comprised of a 220/115 VAC controller and pump, with pressure activated over-temperature protection.

11. (Canceled): The system as in claim 2 comprised of a a photovoltaic panel and low voltage (12VDC) pump, with boiling activated over-temperature protection.

12. (Canceled): The system as in claim 3 comprised of a photovoltaic panel and low voltage (12VDC) pump, with pressure activated over-temperature protection.

13. (Amended): A solar collector over-temperature protection device which consists of a gas bubble "steam" condensing liquid-to-air radiator, a pressure-actuated piston operated air dampers and a fluid thermal expansion/contraction assembly, which consists of: a piston-mechanical actuator for collector air dampers according to Claim 3, a liquid-to-air

Appl. No. 10/085,175

RCE Dated February 18, 2006.

RCE Notice of Non-Compliant Amendment November 06, 2008, Due December 06, 2008

radiator according to Claim 2 and a fluid thermal expansion/contraction assembly according to Claim 1.